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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,900	02/17/2004	Emmanuel Sedda	GRY-118US	9612

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EXAMINER

RIDDLE, KYLE M

ART UNIT PAPER NUMBER

3748

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/779,900

Applicant(s)

SEDDA ET AL.

Examiner

Kyle M. Riddle

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0217/0614/06282004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
 - Page 2, paragraph 10, line 2 of the paragraph, "106" should read --109--;
 - Page 9, paragraph 70, line 2 of the paragraph, "704" should read --709--;
 - Page 9, paragraph 71, line 1 of the paragraph, "704" should read --709--.Appropriate correction is required.

Claim Objections

2. Claims are objected to because of the following informalities:
 - Page 3 of the amendment, claim 3, line 3 of the claim, "including" should read --includes--;
 - Page 3 of the amendment, claim 4, line 3 of the claim, "including" should read --including--.Appropriate correction is required.

3. Claim 6 recites the limitation "these branches" in page 4 of the amendment, claim 6, line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3748

5. Claims 1, 2, 5, 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hattori et al. (U.S. Patent 6,334,413).

Hattori et al. disclose an electromagnetic actuating system comprising:

- two polarized electromagnets with an upper core 40 and coil 48 and lower core 42 and coil 50 with a mobile armature 38 inbetween (column 4, lines 6-9);
- controlling the current to effect switching from a first position with the armature 38 contacting the upper coil 40 (column 4, lines 44-46) to a second position away from the upper core 40 and toward the lower core 42 (column 5, lines 9-24) based on the operating state of the engine computed by ECU 54 to include engine speed (column 4, lines 15-21);
- varying and reducing the attracting current as the armature 38 approaches the lower core 42 (column 4, lines 9-24);
- increasing or decreasing the amount of attracting or releasing current (amplitude) to effect transit times of the armature 38 (column 7, lines 61-67 with column 8, lines 1-10);
- actuating intake and exhaust valves of an internal combustion engine (column 3, lines 25-28).

6. Claims 1, 2, 5, 7, and 9 are further rejected under 35 U.S.C. 102(b) as being anticipated by Yanai et al. (U.S. Patent 5,915,347).

Yanai et al. disclose an electromagnetic valve driving apparatus comprising:

- actuating an intake or exhaust valve of an internal combustion engine (column 1, lines 10-13);

Art Unit: 3748

- two polarized electromagnets with a first electromagnetic core 28 and coil 24 and a second electromagnetic core 30 and coil 26 with a mobile plunger 22 inbetween (column 3, lines 64-67 with column 4, lines 1-9);

- controlling the current through coils 24, 26 to move the armature 22 toward and away from cores 28, 30 to open and close valve 12 (column 4, lines 37-43) based on an operational condition of the engine (column 1, lines 25-27);

- varying and decreasing the current as the plunger 22 approaches the valve closed position (column 5, lines 14-19, column 9, lines 11-14);

- increasing or decreasing the current in coils 24, 26 to effect valve actuation and soft seating of the valve (column 8, lines 11-13, lines 31-34, lines 56-59, lines 63-66).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al. or Yanai et al. in view of Curtis et al. (U.S. Patent 6,532,919).

Hattori et al. and Yanai et al. disclose an electromagnetic actuating system for actuating intake and exhaust valves of an internal combustion engine comprising two polarized upper and lower electromagnets with a mobile armature inbetween, controlling the current to effect switching from a first position with the armature contacting the upper electromagnet to a second position away from the upper electromagnet and toward the lower electromagnet based on the

Art Unit: 3748

operating state of the engine, varying and reducing the attracting current as the armature approaches the upper or lower electromagnets, increasing or decreasing the amount of attracting or releasing current (amplitude) to effect transit times or landing impact of the armature. They, however, fail to disclose reversing or inverting the current.

Curtis et al. teach a permanent magnet enhanced electromagnetic valve actuator that reverses or inverts the current through electromagnetic coil 24 to open and close valve 12 and reduce the landing velocity (column 3, lines 31-40, lines 45-48, lines 57-67 with column 4, lines 1-4). Furthermore, Hattori et al. suggests providing currents in an electromagnet to create a magnetic flux in a direction opposite of the permanent magnet (column 1, lines 42-46), and Yanai et al. suggests providing a second voltage in an opposite direction as a means to decrease electromagnetic attraction (column 2, lines 47-56). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Curtis et al. in the electromagnetic valve systems of Hattori et al. and Yanai et al., since the use thereof would have provided an alternate means to effect valve actuation.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being obvious over Hattori et al. in view of Curtis et al.

Hattori et al. disclose the electromagnetic valve actuator cited above, however, fail to disclose the permanent magnet having a higher intensity than the electromagnet.

Hattori et al. suggest that the attracting force of the electromagnetic current is less than the attracting force of the permanent magnet (Figures 2C and 2D) and the releasing current only needs to be of an intensity to effectively reduce or cancel the attracting force of the permanent magnet allowing the other permanent magnet and electromagnet attracting forces to move the

Art Unit: 3748

armature (column 1, lines 54-67 with column 2, lines 1-7). One of ordinary skill in the art would have reasonably assumed that the intensity of the magnetic field generated by the electromagnet could be less than the intensity of the permanent magnet to still provide valve actuation.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al. in view of Kawamura (U.S. Patent 5,111,779).

Hattori et al. disclose the electromagnetic valve actuator cited above, however, fail to disclose the permanent magnets mounted on an end portion of an E-shaped support structure.

Kawamura teaches an electromagnetic valve actuating system with fixed magnetic poles 4a and either side of a permanent magnet 3 (column 3, lines 9-14) forming generally an E-shaped structure, the permanent magnet 3 forming the middle portion of the "E". It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Kawamura in the electromagnetic valve actuator of Hattori et al., since the use thereof would have provided an alternate location of position the permanent magnets or reducing the number of magnets.

Conclusion

11. The IDS (PTO-1449) filed on 17 February 2004, 14 June 2004, and 28 June 2004 has been considered. An initialized copy is attached hereto.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of 6 patents.

- Yanai et al. (U.S. Patent 5,775,276) disclose an electromagnetic valve driving apparatus which decreases the current before valve impact.

Art Unit: 3748

- Pischinger et al. (U.S. Patent 5,797,360) disclose reducing the current before valve impact based on operating conditions such as engine speed.

- Fuwa (U.S. Patent 6,044,814) discloses an electromagnetically driven valve control apparatus switching between open and closed and reducing the current before impact.

- Newton (U.S. Patent 6,269,784) discloses an electrically actuable engine valve that adjusts the magnitude of the drive and capture current.

- Yanai et al. (U.S. Patent 6,626,146) disclose an electromagnetic valve drive using magnets, modifying currents, and reversing currents.

- Yanai (U.S. Patent 6,044,814) discloses an electromagnetic valve actuation system using permanent magnets and modifying currents.

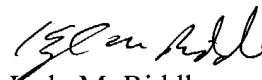
Communication

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (703) 306-3409, and effective 22 November 2004 will be (571) 272-4864. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859 effective 22 November 2004. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3748

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

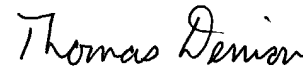


Kyle M. Riddle

Examiner

Art Unit 3748

kmr



THOMAS DEMON

SUPERVISORY PATENT EXAMINER

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